



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B01F 15/00	A2	(11) International Publication Number: WO 98/05417 (43) International Publication Date: 12 February 1998 (12.02.98)
--	-----------	---

(21) International Application Number: PCT/IT97/00203

(22) International Filing Date: 5 August 1997 (05.08.97)

(30) Priority Data:
PD96A000200 6 August 1996 (06.08.96) IT(71) Applicant (for all designated States except US): COROB S.P.A.
[IT/IT]; Via dell'Agricoltura, 3, I-41038 San Felice sul
Panaro (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ROSSETTI, Edoardo
[IT/IT]; Via Repubblica dell'Ossola, 13, I-41034 Finale
Emilia (IT). MARAZZI, Umberto [IT/IT]; Via Provin-
ciale, 58/A, I-41036 Medolla (IT). BRESSANI, Gianmarco
[IT/CN]; Billion Terrace A5/2, 137/139 Blue Pool Blow
Road, Happy Valley, Hong Kong (CN).(74) Common Representative: COROB S.P.A.; Via
dell'Agricoltura, 3, I-41038 San Felice sul Panaro
(IT).(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR,
BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE,
GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,
TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH,
KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE,
CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,
ML, MR, NE, SN, TD, TG).

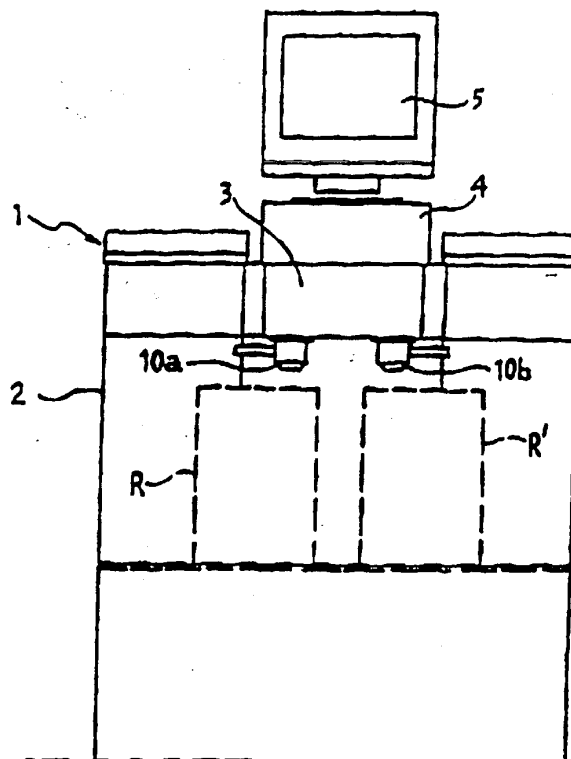
Published

Without international search report and to be republished
upon receipt of that report.

(54) Title: DISPENSING MACHINE FOR FLUID PRODUCTS

(57) Abstract

A dispensing machine comprises a product dispensing station with a dispensing head comprising a first distribution centre in which a plurality of nozzles converges, one for each of the products of a series of products to be dispensed and at least a second distribution centre in which is converging a second plurality of nozzles, one for each of the second series of products to be dispensed. The second distribution centre is provided either on the first dispensing head or on a second dispensing head distinct from the first one.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

Dispensing machine for fluid products

The object of the present invention is a dispensing machine for fluid products, in particular but not exclusively for colorants and the like for the formulation of varnishes and similar according to the preamble of the principal claim.

This machine is mainly studied for the dispensing of two (or more) different series of products, for example, products using water as their carrier (herein after indicated as water-based products or colorants), products using various types of solvents as their carrier (herein after indicated as solvent-based products or colorants) or products using as their carrier fluids compatible with both water and solvents (herein after indicated as universal products or colorants). With the general term "products" it is understood to comprise colorants, pigments, inks, and also fluid basis for varnishes and similar of any of the three mentioned types. The present invention may nevertheless be used to handle and dispense various kinds of fluids other than those previously indicated, in many fields of the industry, for example in the food, chemical, pharmaceutical industries and many others.

In the known realisations, when you wish to dispense water and solvent based products with one single machine not a few problems arise which are frequently the cause of serious inconveniences. In fact, the known machines have either a plurality of moveable carousel canisters as to the distribution position and which are therefore enabled to dispense one single product at the time with a remarkable loss of time and productivity, or one single distribution centre in which the piping and all dispensing nozzles are converged, linked up to the respective dispensing members (pumps and dosing electrovalves). To avoid that, between one dispensing and the other, the products which are not frequently dispensed get dried, obstructing or however inhibiting the correct functioning of the corresponding dispensing centre, it is usually provided a nozzle humidifier device fitted to plug the corresponding distribution centre in order to maintain a status of saturated vapour at the outlet of the nozzles. For example, such device is described in the co-pending patent application no. MI96A000601 of the same

applicant. This humidifier device can be further connected to punching devices and cap-pluggers as described in the applicant's co-pending patent application no. BO95A000591. Moreover, it is possible to associate mechanical devices or other kinds thereof for the hole centring on the can into which the product is to be dispensed.

The water-based, the solvent-based or the universal products nevertheless have different drying times and it is thus possible that a humidifier device calibrated to avoid the drying of the water-based products does not result to be efficient enough to carry out the same task with the solvent-based or universal products and vice versa.

Moreover, the mixture between water-based, solvent-based and universal products is a potential pollution or contamination cause of the dispensed products. For example, drops may form at the nozzle of a product (for example solvent) which then are transferred into the container (can) destined to contain the dispensed product when a different product is dispensed (for example water) through the adjacent nozzle. The pollution or contamination that results from it can irreparably damage the paint altering both the chemical-physical and colorimetric characteristics.

Today, to avoid these inconveniences it is opportune and advisable to use two or more separate dispensing machines, one for each typology of product to dispense. However, the solution is too expensive for the medium-small customers, where dispensed quantities and/or available space do not justify the adoption of more than one dispensing machine. Moreover, this solution does not permit to obtain optimum productivity levels.

The problem at the heart of this invention is to provide a dispensing machine structurally and functionally conceived to enable the overcoming of all complained inconveniences with reference to the above mentioned known technique.

This problem is solved by the invention by means of a machine realised according to the appended claims.

The use of the present invention advantageously allows to duplicate (or multiply, depending on the actual number of dispensing heads and/or dispensing centres) the hourly production of a certain fluid product. In case of dispensation of coloured paints and varnishes and the like, the invention thus allows to produce at the same time two (or more) containers with the same coloured fluid or with different coloured fluids). Furthermore, the doubled or multiplied hourly production capacity is achieved without prejudice to the overall costs, because it is only needed a single machine bearing single computing unit and electronic control devices, the machine being easily integrated in a plant having a single conveying line or where limitation in space is a major concern. It also an advantage of the invention the fact that the delivery and shipping costs of the machine are comparable to those of a traditionally known machine of lower production capacity. A machine according to the present invention also requires no more than a single operator devoted thereto.

In the event that incompatible fluids are to be dispensed, as in the case of water-based and solvent-based products, it is possible to simply avoid any remotely possible contamination which might occur by dedicating each one of the dispensing heads or dispensing centres to each one of said incompatible fluids. This also contributes to eliminate any possible human error as far as the operator is concerned, since distinct dispensing members are clearly allocated which can also be physically marked, labelled or however unmistakably identified.

In the event that the fluid-receiving containers have small openings, small dispensing heads and/or dispensing centres are to be preferred. The present invention allows a user to split the fluids to be dispensed into two or more groups which converge to different and separated heads or centres, however retaining the advantages of a controlling the dispensing operations by means of a single control unit, processor and user interface.

Naturally, the principle of the present invention is applicable to many kinds of dispensing machines, including those specifically designed to handle dangerous fluids, such as those fluid which are flammable or explosive, these machine being known as "explosion proof" machines.

The characteristics and the advantages of the invention will result better from the detailed description that follows of a preferred example of a realisation illustrated, for merely indicative and non-limiting purposes, with reference to the attached drawings, in which :

- figure 1 is a schematic front view of a dispensing machine according to the present invention;
- figure 2 a side view of the same machine of figure 1;
- figure 3 is a schematic top view of the machine of the previous figures;
- figure 4 is a schematic enlarged scale view of one of the two distribution centres of the machine of the previous figures.

In the figures, reference numeral 1 globally indicates a dispensing machine which is realised according to the present invention. In an already known way machine 1 comprises a framework 2 with a dispensing head 3 that overtops a distribution area of one or more products in a liquid state in a container (R and R'). Associated with the machine there is a processing unit with a relevant user interface 4 with a video display 5 and a keyboard 6. This processing unit and the above mentioned accessories thereof are needed to control the plurality of dosing pumps all indicated by 7 and the relevant electrovalves 8 to dose the product distribution in a way which will be clarified here after.

The only dispensing head 3 is provided with a first and second dispensing centre 10a,b respectively structurally identical, but physically separate and at some

distance. Naturally, the structural details of the machine may vary widely within the framework of the present invention which also covers machines having a greater number of dispensing centres, the two or more dispensing centres being placed on either the same single dispensing head, or even on different dispensing heads. In turn, should the machine be equipped with more than one dispensing head, these heads may be placed at any distance the one from the others, lined on the front of the machine, as well as - according to alternative configurations and embodiments - one head on the front and the other on the rear side of the machine body, and more generally on opposite sides of the machine body.

In every dispensing centre 10a,b a respective plurality of nozzles 11 are converged, which are connected to the respective electrovalves 8 by means of pipings 12. The structure of each dispensing centre is known, for example the type described in the patent application no. MI96A000601, and preferably comprises a respective and independent support 13 for the nozzles 11 (in the example defined by the free extremities of the corresponding pipings 12) and a respective and independent humidifier device with relevant cap, altogether indicated with 14, of a known type. Moreover, each distribution centre can comprise a punching device and/or a plugging device of the type described in the co-pending patent application no. BO95A000591 in Italy, the content of which is hereby expressly incorporated.

In this way it is possible to dispense, by means of the single and common dispensing head 3, two or more different series of products, for example water- and solvent-based ones, through either the one or the other of the two dispensing centres 10a,b or even simultaneously, in two different containers, exploiting for the other functions the common resources of the same machine 1, included also the processing unit with the control system and the user interface.

In this way the invention solves the problem with a simple and compact machine, able to guarantee the non-pollution between dispensed products of a different

nature and also capable to protect in a optimum way the dispensing nozzles of products of different nature from possible drying of the dispensed product.

Moreover, it allows to dispense simultaneously the products of the same nature in the same container or simultaneously products of a different nature in two or various containers offering in this way a high productivity level without cost increase.

It is understood that it is likewise possible to equip the machine with further dispensing centres, within the limits set by the contingent needs and by the overall dimensions thereof.

CLAIMS

1. Dispensing machine for fluid products, in particular but not exclusively colorants and the like for the formulation of varnishes and similar, comprising a dispensing station for said products with a dispensing head comprising a dispensing centre for said products in which a plurality of nozzles converges, one for each product of a series of products to dispense, characterised by the fact that the machine comprises at least a second dispensing centre where a second plurality of nozzles converges, one for each of the second series of products to dispensed.
2. A machine according to claim 1, wherein the at least second dispensing centre is disposed on a second dispensing head distinct from the first dispensing head.
3. A machine according to claim 1, wherein the second dispensing centre is disposed on the first dispensing head.
4. A machine according to claim 1, wherein said distribution centres are structurally and functionally independent one from the other and reciprocally at some distance.
5. A machine according to claim 4, wherein for each of said distribution centres it is provided a separate support for the corresponding plurality of nozzles.
6. A machine according to claim 5, wherein for each of said distribution centres it is provided a separate humidifier device of said nozzles.
7. A machine according to claim 6, wherein said humidifier device of said nozzles comprises a punching device.

8. A machine according to claim 4, wherein for each of said distribution centres it is provided a separate humidifier, punch and plug device.
9. A machine according to claim 4, wherein for each of said distribution centres it is provided a separate can hole centring device.
10. A machine according to claim 1, wherein said distribution centres are controlled by and associated to one single control and user interface system.
11. A method for dispensing fluid products by means of a machine according to claim 1, wherein said distribution centres are activated in parallel to dispense simultaneously the respective products in a corresponding number of different containers.

FIG. 1

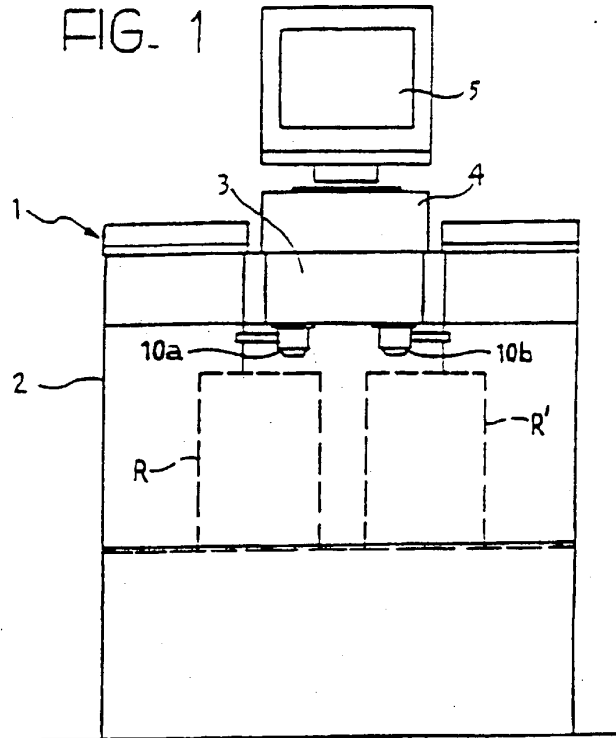


FIG. 2

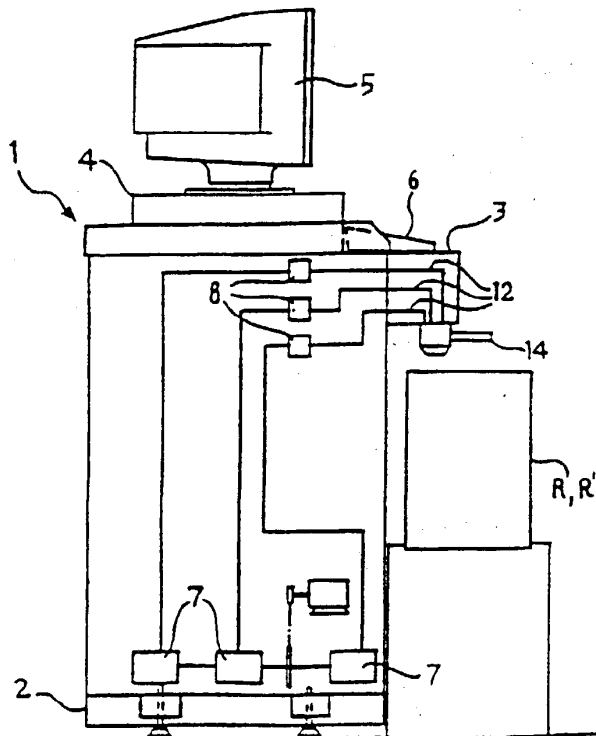


FIG. 3

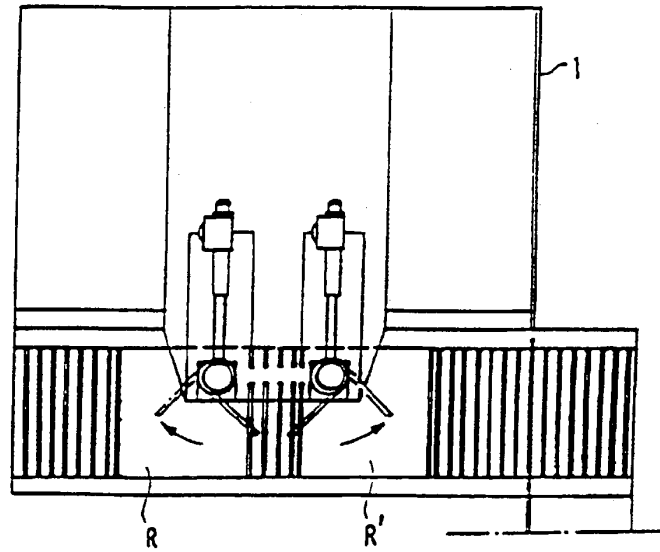
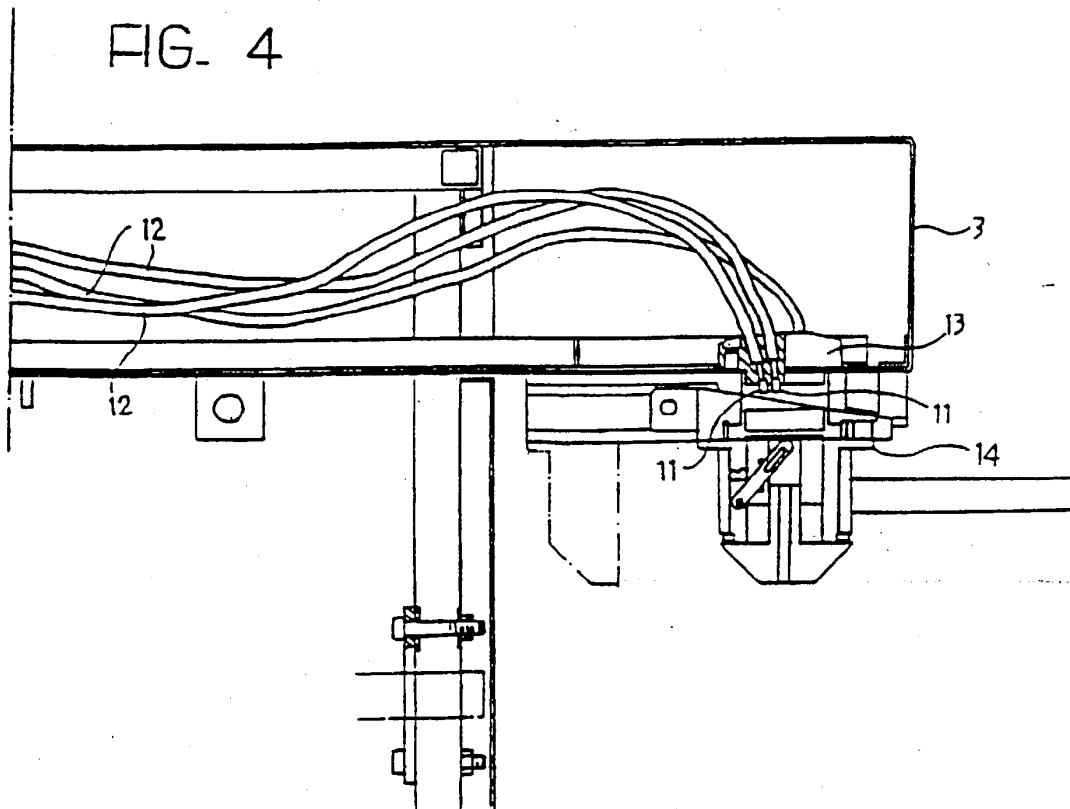


FIG. 4





INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification⁶ : B01F 15/02, 13/10, B67D 5/02, 5/04, G01G 17/06, B01L 11/00</p>	<p>A3</p>	<p>(11) International Publication Number: WO 98/05417</p> <p>(43) International Publication Date: 12 February 1998 (12.02.98)</p>
<p>(21) International Application Number: PCT/IT97/00203</p> <p>(22) International Filing Date: 5 August 1997 (05.08.97)</p> <p>(30) Priority Data: PD96A000200 6 August 1996 (06.08.96) IT</p> <p>(71) Applicant (for all designated States except US): COROB S.P.A. [IT/IT]; Via dell'Agricoltura, 3, I-41038 San Felice sul Panaro (IT).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): ROSSETTI, Edoardo [IT/IT]; Via Repubblica dell'Ossola, 13, I-41034 Finale Emilia (IT). MARAZZI, Umberto [IT/IT]; Via Provin- ciale, 58/A, I-41036 Medolla (IT). BRESSANI, Gianmarco [IT/CN]; Billion Terrace A5/2, 137/139 Blue Pool Blow Road, Happy Valley, Hong Kong (CN).</p> <p>(74) Common Representative: COROB S.P.A.; Via dell'Agricoltura, 3, I-41038 San Felice sul Panaro (IT).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p> <p>(88) Date of publication of the international search report: 12 March 1998 (12.03.98)</p>
<p>(54) Title: DISPENSING MACHINE FOR FLUID PRODUCTS</p> <p>(57) Abstract</p> <p>A dispensing machine comprises a product dispensing station with a dispensing head comprising a first distribution centre in which a plurality of nozzles converges, one for each of the products of a series of products to be dispensed and at least a second distribution centre in which is converging a second plurality of nozzles, one for each of the second series of products to be dispensed. The second distribution centre is provided either on the first dispensing head or on a second dispensing head distinct from the first one.</p> <div style="text-align: center;"> </div>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KR	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 97/00203

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 B01F15/02 B01F13/10 B67D5/02 B67D5/04 G01G17/06
B01L11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B01F B67D G01G B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 648 527 A (ITALTINTO SRL) 19 April 1995 see column 1, line 45 - column 3, line 15; claims 1,2; figure 1 Y-Doc. with US-A-5325896	1-6,9-11
Y	DE 32 01 221 A (RIBIC WALTER) 28 July 1983 see page 6, line 9 - page 7, line 12 see page 8, line 12-20 see page 10, line 4-12; claim 5; figure 1 Y-Doc. with US-A-5325896	1-5,9-11
Y	EP 0 283 137 A (ICI PLC) 21 September 1988 see column 6, line 44-55; figure 2 Y-Doc. with US-A-5325896	1-5,9-11
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

7 January 1998

Date of mailing of the international search report

23.01.98

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Hoffmann, A

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT 97/00203

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 705 083 A (ROSSETTI EDOARDO) 10 November 1987 see column 1, line 55 - column 2, line 66; claims 1-6; figure 3 Y-Doc. with US-A-5325896 ---	1-5,9-11
P,A	EP 0 779 241 A (COROB S P A) 18 June 1997 cited in the application see abstract ---	7,8
Y	US 5 325 896 A (KOCH WOLFGANG H ET AL) 5 July 1994 see column 4, line 47 - column 5, line 26; figure 1 -----	1-6,9-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 97/00203

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0648527 A	19-04-95	IT MI932178 A	14-04-95
		AT 151660 T	15-05-97
		CA 2114811 A	15-04-95
		DE 69402655 D	22-05-97
		DE 69402655 T	16-10-97
		ES 2102698 T	01-08-97
		US 5449028 A	12-09-95

DE 3201221 A	28-07-83	NONE	

EP 0283137 A	21-09-88	AU 591832 B	14-12-89
		AU 1205288 A	15-09-88
		CA 1329926 A	31-05-94
		CN 1011774 B	27-02-91
		DE 3870291 A	27-05-92
		GB 2201947 A,B	14-09-88
		JP 1842043 C	12-05-94
		JP 63236526 A	03-10-88
		US 5129551 A	14-07-92

US 4705083 A	10-11-87	CA 1254973 A	30-05-89
		DK 270186 A	07-08-86
		WO 8602320 A	24-04-86
		EP 0198856 A	29-10-86

EP 0779241 A	18-06-97	IT 80950591 A	16-06-97

US 5325896 A	05-07-94	US 5213142 A	25-05-93
